

Appendix 3: Study characteristics table [posted as supplied by author]

Ref. No.	First author (year)	Country	Design	Recruitment	n	Age range	Sampling method	Antibiotic susceptibilities	Guidelines used to interpret sensitivities	Reported first-line UTI antibiotics?	Previous exposure to antibiotics reported?	Variables adjusted for in antibiotic exposure analysis
OECD												
8	Gaspari (2005)	USA	RO	OP	12,731	0-17 yrs	NR	AMP, CZ, CIP, NIT, COT, COA	CLSI	Six most common UTI treatments in USA reported	N	-
20	Edlin (2013)	USA	RO	ED, OP	25,418	0-17 yrs	NR	COT, AMP, COA, NIT, CL, CFX, CZ, CFZ, GEN, CIP, IMI, CFU, PIP-TAZ, AZT	CLSI	COT or cephalosporin	N	-
21	Falagas (2008)	Greece	RO	PC	2460	0-14 yrs	NR	AMP, COA, CC, CP, COT, AMI	CLSI	COT (IDSA guidelines)	N	-
22	Conway (2007)	USA	RO	PC	74,974	0-6 yrs	C, B	-	CLSI	NR	Y	Gender, race, age
23	Fritzsche (2005)	Switzerland	RO	H ^a	354	0-15 yrs	MSU, B, C	AMP, COA, COT, CL, CFU, CFX,	CLSI	NR	N	-
24	Duffy (2013)	UK	RO	PC	1855 ^b	0-16 yrs	NR	TRI	NR	TRI	Y	Gender, year urine sample was taken, number of isolates in study period (2004-2009)
25	Yolbas (2013)	Turkey	RO	PC	113	0-15 yrs	MSU, B	AMI, COA, AMP, AMP-SUL, AZT, CZ, CF, CTX, CX, CFZ, CFX, CFU, CIP, ERT, GEN, IMI, LEV, MER, NIT, NOR, PIP, PIP-TAZ, TET, TOB, COT	CLSI	NR	N	-
26	Cullen	Ireland	RO	PC	13,034	0-14 yrs	MSU	AMP, TRI, CIP, COA, CFU,	CLSI	TRI or NIT	N	-

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	(2013)							GEN, NIT,				
27	Guner (2012)	Turkey	RO	OP	1564	0-17 yrs	MSU, B	AMI, COA, AMP, GEN, IMI, NIT, CZ, CFP, CXM, CFP, CTX, CFX, CFU, CIP, COT	CLSI	AMP or COT or 1 st generation cephalosporin	N	-
28	Mantadakis (2011)	Greece	RO	PD	430	0-14 yrs	MSU, C, SA	AMP, COA, TIC, TIC-CLA, CL, CX, CTX, CFZ, IMI, GEN, TOB, NET, AMI, NA, CIP, NOR, OFL, NIT, COT	CLSI	NR	N	-
29	Caracciolo (2011)	Italy	RO	OP	177	0-3 yrs	MSU, C	AMP, COT, COA, CFZ, GEN	CLSI	COT or COA	N	-
30	Paschke (2010)	USA	RO	PD	426	0-6 yrs	MSU, C	AMP, COT, COA	NR	NR	N	-
31	Senel (2010)	Turkey	RO	H ^a	2562	0-16 yrs	MSU, C, SA	AMI, NET, GEN, CIP, CZ, CL, CFU, CFZ, CFX, CF, CFP, AMP, COA, AMP-SUL, COT, PIP, IMI, AZT	CLSI	COT (WHO guidelines)	N	-
32	Catal (2009)	Turkey	RO	PC	204	0-14 yrs	MSU, C, B	AMP, COT, GEN, CFU, AMI, CTX, CIP, IMI, PIP, NIT	CLSI	AMP or aminoglycosides	N	-
33	Prelog (2008)	Austria	RO	H ^a	478	0-15 yrs	MSU, C	AMP, COA, CZ, CXM, CFX, CTX, CFU, CIP, GEN, IMI, NIT, TRI, COT	NR	AMP or COA or CZ or CXM or TRI or COT	N	-
34	Gaspari (2006)	USA	RO	PC	11,341	0-17 yrs	MSU, B, C	AMP, COA, CZ, COT	CLSI	NR	N	-
35	Mehr (2004)	Australia	RO	ED	90	0-6 yrs	MSU, C, SA	AMP, TRI, CL, NIT, CIP, GEN	CLSI	TRI or COT	N	-
36	Burman (2003)	USA	RO	OP	137	0-16 yrs	NR	COT	CLSI	COT	N	-
37	Ladhani (2003)	UK	RO	PC	1774	0-15 yrs	NR	AMP, CD, CFU, COA, GEN, CIP, NIT, TRI	BSAC	NR	N	-
38	McLoughlin (2003)	USA	RO	ED	126	0-17 yrs	MSU, C	COT, AMP, AMP-SUL, CZ, NIT	CLSI	COT	Y	None
39	Ashkenazi	Israel	RO	ED, OP	160	0-14 yrs	MSU, B, C,	SUL, COT, NA, NIT, GEN,	CLSI	COT or AMP	N	-

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	(1991)						SA	AMP, PIP, CL, CFU, CFZ		or 1 st generation cephalosporin		
40	Gruneberg (1976)	UK	RO	OP	37	0-16 yrs	MSU	AMP, STR, TET, CHL, SUL	NR	NR	N	-
41	Bryce (2010)	UK	RO	PC	1746	0-10 yrs	MSU	AMP, AMI, CFZ, CLX, COA, CTX, GEN, NA, NIT, NOR, TOB, TRI, CIP	CLSI	TRI or NIT	N	-
42	McGregor (2014)	USA	RO	OP	3681	0-15 yrs	NR	AMP, COA, CZ, CL, CIP, GEN, NIT, TET, TOB, COT	NR	COT (AAP guidelines)	N	-
43	Swerkerson (2014)	Sweden	RO	ED	928	0-2 yrs	MSU, C, B, SA	TRI, NIT, CD	CLSI	TRI	N	-
44	Anatoliotaki (2007)	Greece	PO	H ^a	208	0-14 yrs	MSU, C, SA	AMP, COA, CC, CFU, COT, NIT, GEN	CLSI	COA or COT	N	-
45	Gallegos (2013)	Chile	PO	ED	100	0-5 yrs	C	AMP-SUL, CL, CFZ, CTX, GEN, CIP, COT, NIT	NR	Cephalosporin	N	-
46	Ismaili (2011)	Belgium	PO	ED	189	0-17 yrs	MSU, C, SA	AMP, COA, COT, NIT, CFU, CFZ, CTX, CFX, CIP, GEN, AMI, TEM	NR	AMP or COT	N	-
47	Ipek (2011)	Turkey	PO	OP	103	0-14 yrs	MSU, C	AMP, COA, CZ, CFU, CXM, CF, AZT, IMI, GEN, CIP, NIT, COT	CLSI	NIT or CXM	N	-
48	Yildirim (2010)	Turkey	PO	OP	109	0-17 yrs	NR	COT, AMP, COA, CC, CIP, CFX, CFZ, IMI, PIP, AMI, GEN	CLSI	COT	N	-
49	Borsari (2008)	Switzerland	PO	OP	100	0-17 yrs	MSU, C	AMP, CPD, COA, COT, NIT	CLSI	COT or COA or cephalosporin	N	-
50	Allen (1999)	USA	CC	PD	967	0-6 yrs	NR	AMP, COT, GEN, CZ, CTX, NIT, NOR, TIC	CLSI	COT	Y	Gender, age, genitourinary tract abnormalities, previous hospital admissions, genitourinary

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												reflux, malignant disorder.
51	Topaloglu (2010)	Turkey	CC	OP	4105	0-16 yrs	MSU, B, C, SA	-	CLSI	NR	Y	Renal abnormalities, history of systemic diseases, previous hospitalisation
Non-OECD												
52	Alshara (2011)	Jordan	RO	H ^a , OP	435	0-15 yrs	NA	AMI, COA, AMP, CFZ, CLX, CXM, CIP, CL, COT, CFX, CTX, GEN, NA, NOR	NR	COT or NIT or cephalosporin	N	-
53	Al-Saif (2012)	Saudi-Arabia	RO	PC	175	0-14 yrs	MSU, B, C	AMP, CFU, NIT, COT, CTX, CFZ, CFX, GEN, AMI, TAZ, IMI	CLSI	AMP or COT	N	-
54	Valavi (2013)	Iran	RO	H ^a	242	0-15 yrs	MSU, C, SA	COT, AMI, GEN, NA, CFX, CTX, CXM, NIT	CLSI	COT	N	-
55	Muoneke (2012)	Nigeria	RO	OP	15	0-5 yrs	NR	GEN, CFX, CIP, CFZ, CFU, CTX	NR	CIP	N	-
56	Farshad (2011)	Iran	RO	OP	90	0-14 yrs	NR	AMP, COT, TET, CHL, NA, CXM, CFU, GEN, CFZ, CIP, NOR	CLSI	NR	N	-
57	Al-Mardeni (2009)	Jordan	RO	OP	429	0-14 yrs	NR	AMP, COT, NA, CLX, NIT, CFX, GEN,	CLSI	COT or CLX (AAP guidelines)	N	-
58	Guidoni (2008)	Brazil	RO	PD	206	0-15 yrs	MSU, C	NIT, NA, NOR, CIP, AMI, AMP, COT	CLSI	COT or AMP (WHO guidelines)	N	-
59	Rai (2008)	Nepal	RO	OP	502	0-15 yrs	MSU	NIT, NA, AMI, OFL, CIP, COT, CFX, CTX, CLX, NOR, CHL, GEN	NR	NR	N	-
60	Goldraich (2002)	Brazil	RO	ED	225	1-12 yrs	SA	NIT, NA, CLX, COT	CLSI	NR	N	-
61	Sharef	Oman	RO	PC	120	0-14 yrs	MSU, C	AMP, COA, AMI, CIP, CTX,	NR	COT (AAP	N	-

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	(2015)							CFX, CFU, NIT, GEN, MER, COT, TAZ		guidelines)		
62	Sharan (2013)	India	PO	NR	49	0-5 yrs	SA	AMP, COA, CLX, CIP, NOR, OFL, AZI, LEV, NIT, AMI, CFZ, CFU, GEN, IMI, MER, CTX, CFX, PIP-TAZ	NR	NR	N	-
63	Mandal (2012)	India	PO	OP	406	0-17 yrs	MSU, C, SA	CIP	CLSI	COT (IDSA guidelines)	N	-
64	Sharma (2011)	Nepal	PO	OP	27	0-15 yrs	MSU	CTX, OFL, NOR, NIT, NA, CIP, AMI, AMP, COT	CLSI	Quinolones	N	-
65	Wu (2012)	Taiwan	PO	H ^a	136	0-4 mth	C, B, SA	AMP, CZ, GEN, COT, CFX	CLSI	NR	N	-
66	Farshad (2012)	Iran	PO	H ^a	96	0-14 yrs	NR	AMP, COT, TET, NA, CXM, GEN, CIP, NIT, AMI, IMI	CLSI	NR	N	-
67	Pourakbari (2012)	Iran	PO	PC	50	0-12 yrs	MSU, C, SA	COT, GEN, CL, CFU, CXM, AMI, NIT, MER, CFX	CLSI	COT	N	-
68	Farshad (2010)	Iran	PO	OP	96	0-14 yrs	NR	AMP, NA, CXM, GEN, CIP, NIT, AMI, IMI	CLSI	NR	N	-
69	Adjei (2004)	Ghana	PO	H ^a	15	0-1 yr	SA	AMP, COA, COT, NIT, CFU	CLSI	COT or AMP	N	-
70	Al-Mugeiren (1996)	Saudi-Arabia	PO	PC	596	0-12 yrs	MSU	AMP, SUL, TRI, NIT, GEN, COA, CFU, CFZ	NR	NR	N	-
71	Helin (1986)	Kuwait	PO	OP	67	0-12 yrs	NR	AMP	CLSI	AMP	N	-
72	Narchi (2008)	United Arab Emirates	PO	H ^a	208	0-12 yrs	MSU, C, SA	AMP, COA, CLX, CFU, GEN, COT, NIT, NA	CLSI	Cephalosporin	N	-
73	Brown (2003)	Nigeria	CC	OP	17	1-15 yrs	MSU	AMP, GEN, CFX, CFZ, CFU, NIT, NA, COA, COT	NR	COT or AMP	N	-
74	Fredrick (2013)	Tanzania	CS	H ^a	25	0-5 yrs	C, SA	COT, AMP, COA, CFX, GEN, AMI	CLSI	AMP or COT (WHO guidelines)	N	-
75	Afsharpaiman (2012)	Iran	CS	H ^a	81	0-2 yrs	MSU, SA	CTX, CLX, CXM, CFZ, AMI, GEN, CHL, NA, NIT	CLSI	NR	N	-
76	Sedighi	Iran	CS	H ^a	100	0-5 yrs	MSU, C,	COT, CXM, NA, NIT, CFX,	CLSI	COT	N	-

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	(2014)						SA	AMI				

Where - = not applicable

Design: RO = retrospective observational; PO = prospective observational; CC = case-control; CS = cross-sectional.

Recruitment: OP = outpatient department; PC = primary care centre/community practice; ED = emergency department; H = hospital admission; LR = laboratory records; PD = paediatric physician visit.

Sampling method: MSU = midstream urine/clean-catch; B = urine bags; C = catheter; SA = suprapubic aspiration; NR = not reported

Antibiotic susceptibilities: AMI = amikacin; AMP = ampicillin; AMP-SUL = ampicillin-sulbactam; AZI = azithromycin; AZT = aztreonam; CC = cefaclor; CD = cefadroxil; CF = cefepime; CFP = cefoperazone; CFU = cefuroxime; CFX = ceftriaxone; CFZ = ceftazidime; CHL = chloramphenicol; CIP = ciprofloxacin; CL = cefalothin; CLX = cefalexin; COA = co-amoxiclav; COT = co-trimoxazole; CP = cefprozil; CTX = cefotaxime; CX = ceftazidime; CXM = cefixime; CZ = cefazolin; GEN = gentamicin; IMI = imipenem; LEV = levofloxacin; MER = meropenem; NA = naladixic acid; NET = netilmicin; NIT = nitrofurantoin; NOR = norfloxacin; OFL = ofloxacin; PIP = piperacillin; PIP-TAZ = piperacillin-tazobactam; STR = streptomycin; SUL = sulfamethoxazole; TAZ = tazobactam; TEM = temocillin; TET = tetracycline; TIC = ticarcillin; TRI = trimethoprim

Guidelines: CLSI = Clinical & Laboratory Standards Institute; BSAC = British Society for Antimicrobial Chemotherapy; NR = not reported

First-line antibiotics: based on reporting of first-line antibiotics used for paediatric UTI in the paper. Guidelines referred to include Infectious Disease Society of America (IDSA), World Health Organisation (WHO) and the American Academy of Pediatrics (AAP).

^a For all studies recruiting hospital inpatients: reference 33, 44 and 66 were recruited and sampled on admission, sample confirmed as taken within 48hrs; reference 23, 31, 52, 54, 65, 69, 72, 74, 75 and 76 recruited confirmed CA-UTI cases on admission.

^b For all studies except reference 24, only one urine sample per child was analysed. Reference 24 included multiple urine samples per child recruited to the study.